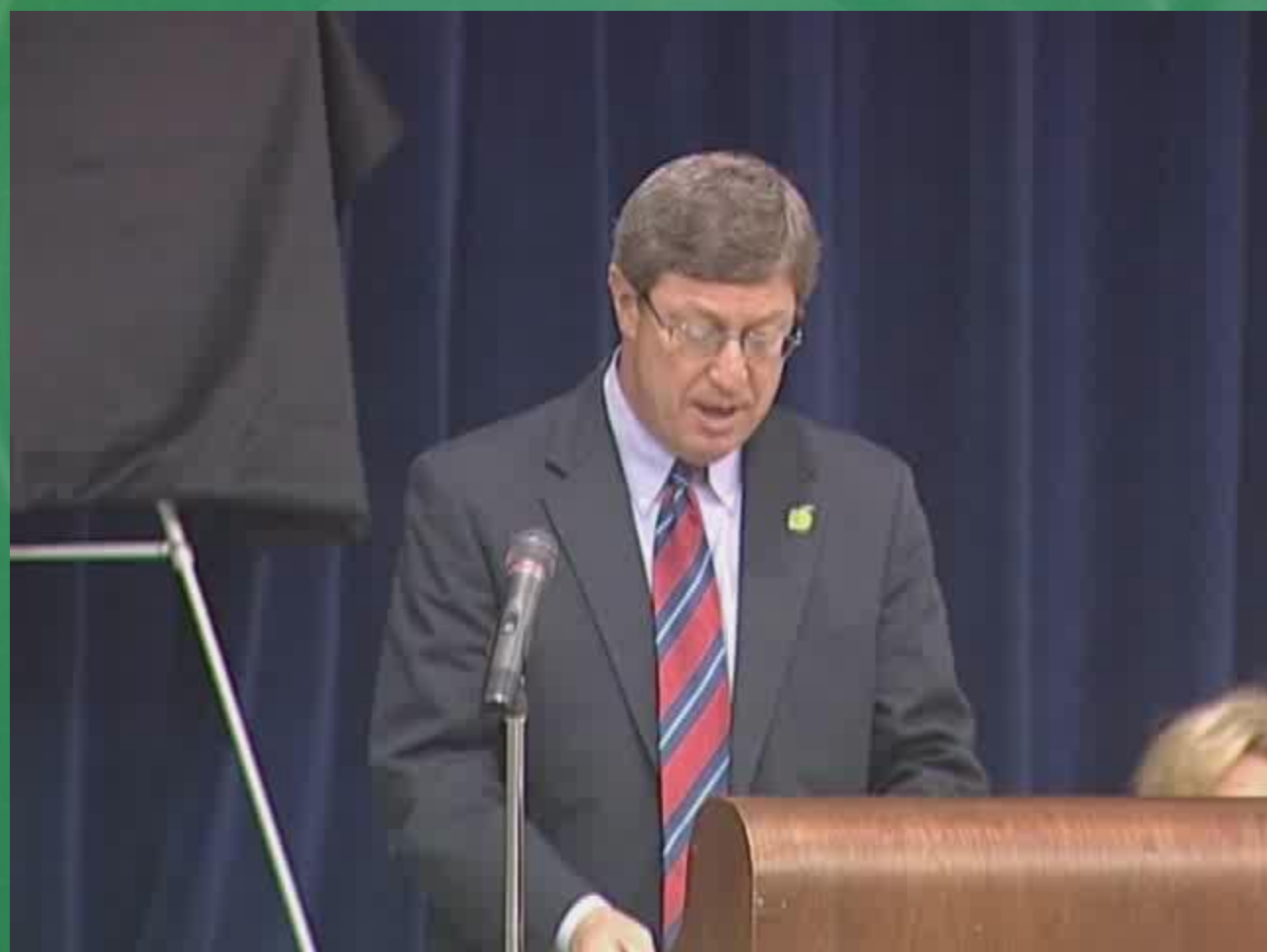


ENERGY AUDIT

Profit Through Sustainability

Changing Set Points and Habits of Existing Users





AGENDA

1. Background
2. How Rosa Parks Elementary saved 47% energy in one year
3. Integrated into classroom curriculum
4. Results
5. Where do we go from here?

The background is a vibrant green with a pattern of small, overlapping circles. A large, semi-transparent white circle is centered in the upper half of the image. The title text is positioned within the lower half of this white circle.

How We Got Started

History

- Leadership saw the need to address energy & sustainability at a high level
- Previous approaches unsuccessful
- Formed a Sustainability Program Team
 - Smith Management Group
 - Ross Tarrant Architects
 - CMTA Engineers
- No SEMP Energy Managers at this time

Pilot School Selection Process

- Fayette County Public Schools – 2nd Largest Public K-12 district in KY
 - ~58 schools
- District Wide Footprint Process
 - Rosa Parks Elementary 1 of 2 schools selected
 - Current Energy Usage
 - School Leadership
 - School Culture



Rosa Parks Elementary

FY2009

- Built in 1998 – 68,985 ft²
- Kindergarten – 5th Grade
- 765 Students
- Geothermal HVAC system
- FY 2009 – 80 KBtu/square feet/year (EUI)
- FY 2009 – \$119,722.53 electricity costs
- FY 2009 – Energy Star Score: 19

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Implementation

Stakeholders

- Identify Internal & External Partners
 - Sustainability Program Team
 - School Principal, Teachers, Staff & Custodians
 - District Maintenance
 - Energy Manager
 - Vendors
 - Non-Profits
 - KY NEED
 - KY Green & Healthy Schools
 - Bluegrass Pride

Rosa Parks Elementary Assessment

- Evaluate Existing Systems & Operations
 - Mechanical and Electrical Systems
 - Lighting Level Evaluations
 - Indoor Air Quality Testing and HVAC Setpoints
 - Envelope
 - Visual Inspection
 - Operations
 - Systems Scheduling
 - Occupant Behavior

Terminology

- Energy Conservation Opportunity (ECO)
- Energy Conservation Measure (ECM)
- Student Engagement Opportunity (SEO)

ECM Action Plan

- Shortened HVAC operating hours
 - Occupied vs. Summer Strategies
- Modified HVAC operating sequence
- De-lamping in over-lit areas
- Adjusted Outdoor Air ventilation for summer time's low occupancy
- Adjusted automatic computer shutdown time

SEO Action Plan

- Turning off lights, computers, printers, unnecessary electronics
 - Kids using mechanical pencil sharpeners
- Ensure exterior doors & windows remain closed (use HVAC)
- Student energy p
- Students turning
- Custodial /Food S



The background is a vibrant green with a pattern of small, overlapping circles. A large, semi-transparent circle is centered on the page, containing a detailed image of the Earth (a globe). The text "Classroom Integration" is written in a bold, black, sans-serif font across the middle of the large circle.

Classroom Integration



E=USE²

*Education Leads to Understanding
Sustainability, Energy, and the Environment*

- Students assess their school
 - Light Level, Plug Load measurements
- Student Energy Patrols
 - Leave behind 'Oops' or 'Thank You' stickers
- Integration of STEM
 - Understanding charts, graphs, trends
- Fosters a grass-roots effort for energy management
- Instills principles of stewardship



Other Sustainable Initiatives



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pick-up

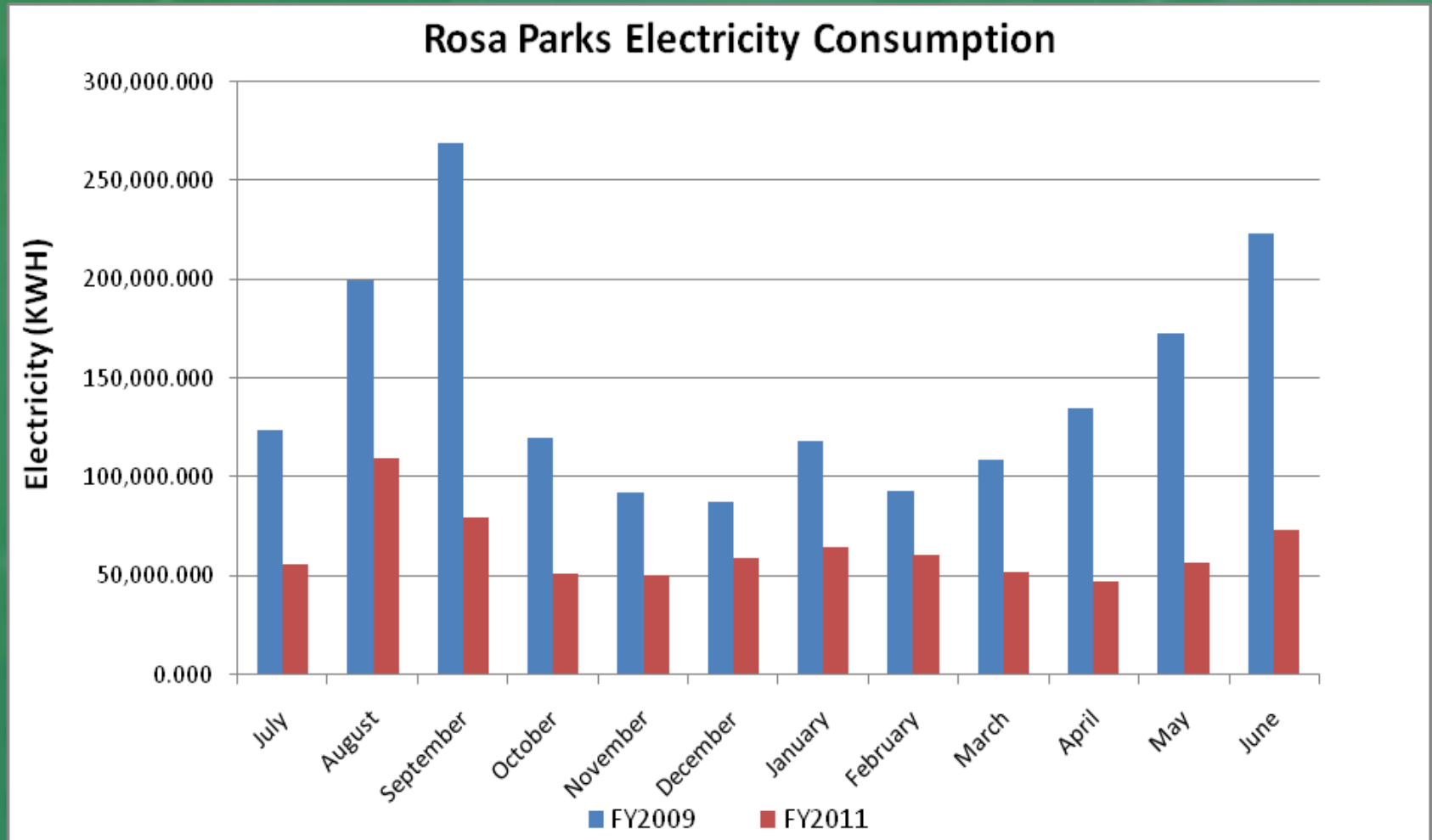
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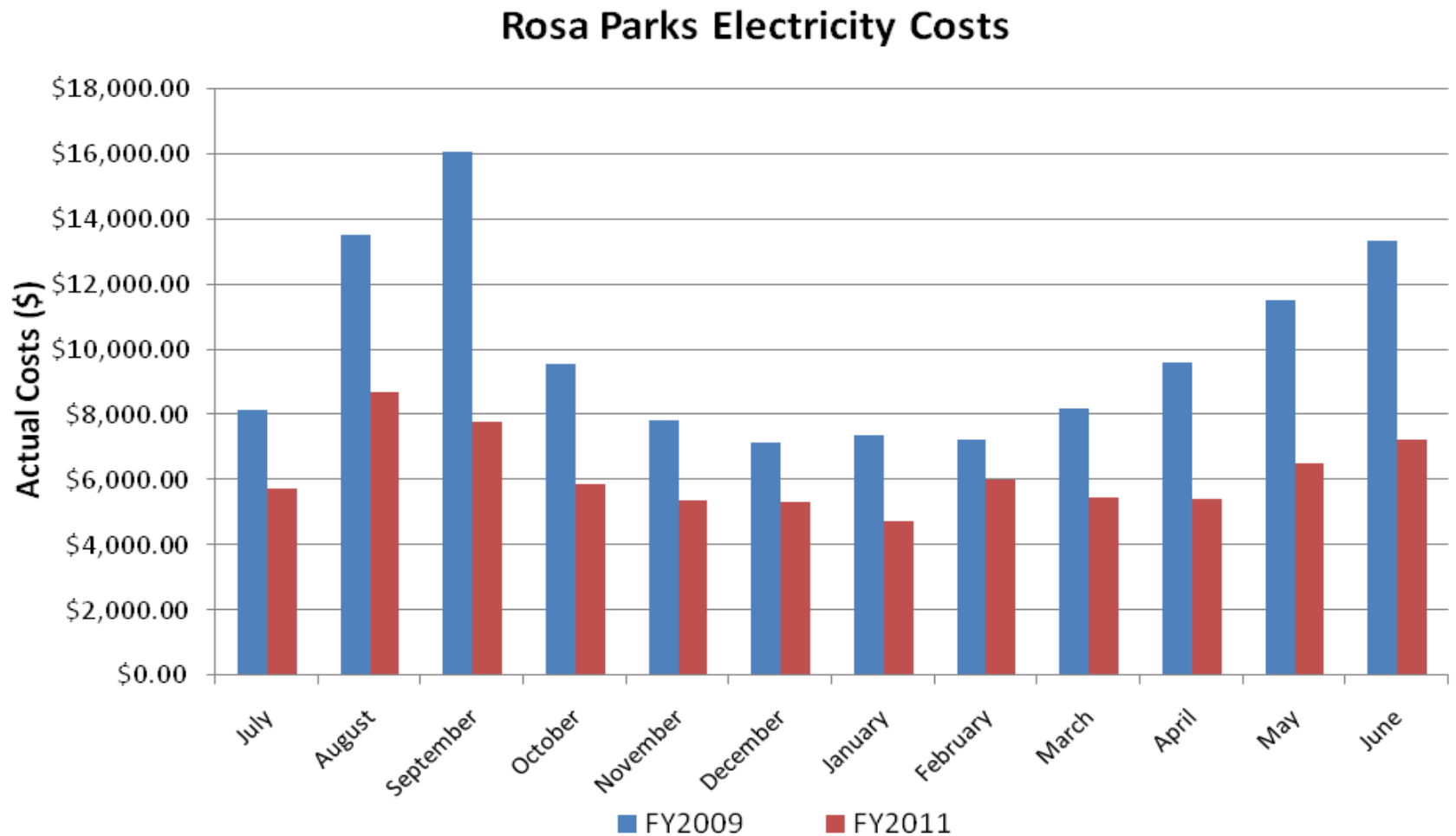
The background is a vibrant green with a pattern of small, overlapping circles. A large, semi-transparent white circle is centered on the page, containing the word "Results" in a bold, black, sans-serif font. The overall design is clean and modern, with a focus on the central text.

Results



Electricity Consumption



Electricity Costs

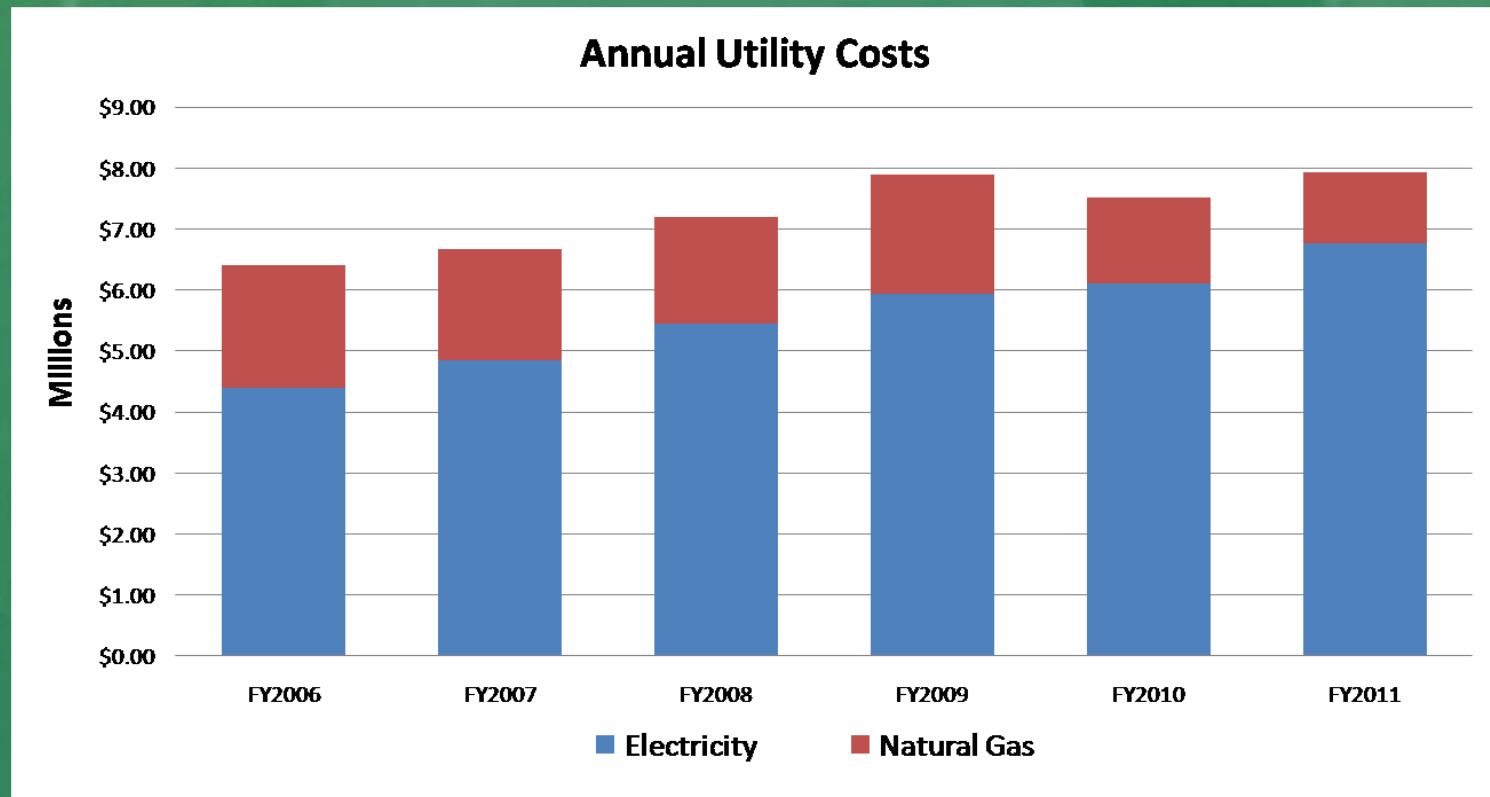


Cost Savings Calculation

Rosa Parks Elementary - Main Building Electricity Usage			
	  <p>FY 2011 – 41 KBtu/sq ft/yr</p>		
July			
August			
September			
October			
November			
December			
January			
February			
March			
April			
May			
June			
Grand Total	702,500	1,771,810	115,722.55
FY2011 Savings:	982,080 kwh		\$52,666.04

Utility Bills

- FY11 Electricity: \$6.7 Million
- FY11 Natural Gas: \$1.3 Million



The Rosa Parks Elementary Story

47% Energy Savings in One Year



Cost Savings of \$52,600+

Process Evaluation

- Mechanical/Electrical Adjustments ~16%
- Cultural Changes ~31%
- **Total: 47% Energy Savings**



- Note: Results will vary per school

LEED EBie

- LEED for Existing Buildings (EBie)
- Idea expanded upon in USGBC KY Chapter effort in Jessamine County

Student Awareness Video



What Can You Do?

Stephanie Febles, P.E. – CMTA Engineers

Johnathan Stewart, EIT – CMTA Engineers

